

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207448F: C2ISR Tactical Data Link							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	1.671	1.659	1.584	0.000	1.584	1.608	1.633	1.658	1.682	Continuing	Continuing
675045: C2ISR Tactical Data Link	1.671	1.659	1.584	0.000	1.584	1.608	1.633	1.658	1.682	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Tactical Data Links (TDL), as a subset of the broader Airborne Network are used in a combat environment to exchange information such as messages, data, radar tracks, target information, platform status, imagery, and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. TDLs provide a jam-resistant; secure digital data transfer network capability with new and standardized waveforms and data formats allowing Line of Sight (LOS) and Beyond Line of Sight (BLOS) intra- and inter-flight communications. TDLs are used by all Service theater Command and Control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Integrated Broadcast Service (IBS), Intra-Flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), and Tactical Targeting Network Technology (TTNT).

This effort provides critical capability and enhancements to the Airborne Network by creating common development, integration and interoperability among ground and C2 platforms including, but not limited to Airborne Warning and Control System (AWACS), Joint Surveillance Target Attack Radar System (JSTARS), the Air and Space Operations Center (AOC), Global Hawk, Predator, Reaper, Rivet Joint, Combat Sent, and Cobra Ball. TDLs keep all C2ISR Platforms and data linked weapons current/interoperable in the Airborne Network to enable Global Strike (GS), Global Persistent Attack (GPA), Offensive and Defensive Counterair (OCA and DCA) and Suppression of Enemy Air Defenses (SEAD) missions. TDLs increase mission effectiveness, provide situational awareness, and provide positive identification of aircraft in the network, correlate on- and off-board sensor data sharing, target, and threat information, and provide the datalink to accomplish time critical targeting and other mission update functions. TDL efforts include incorporating changes and additions to the Link-16 message standard (MIL-STD-6016D) and applicable Interface Change Proposals (ICPs), assisting with AF and Joint interoperability certification testing with the Air Force Global Cyberspace Integration Center (GCIC) and Joint Interoperability Test Center (JITC); future development, integration, and verification of Operational Flight Program (OFP) upgrades due to TDL integration; support of data gathering processes; studying and incorporating data link technologies to ensure effectiveness and efficiency of the Global Strike and Global Persistent Attack CONOPS; and incorporating Interoperable Systems Management and Requirements Transformation (iSMART), a process which enables network centric interoperability assessments to be made more quickly and effectively.

Activities also include studies and analysis to support both current program planning and execution and future program planning to include the period of dual E-3 AWACS mission configuration ending in FY15.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
3600: Research, Development, Test & Evaluation, Air Force		PE 0207448F: C2ISR Tactical Data Link			
BA 7: Operational Systems Development					
C2ISR Tactical Data Link program is in Budget Activity 7, Operational System Development, since it supports integration of tactical data links into operational systems.					
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	1.719	1.659	0.000	0.000	0.000
Current President's Budget	1.671	1.659	1.584	0.000	1.584
Total Adjustments	-0.048	0.000	1.584	0.000	1.584
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.048	0.000	1.584	0.000	1.584
Change Summary Explanation					
Shift of focus to AWACS Block 40/45 development while Block 30/35 approaches phase out.					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207448F: C2ISR Tactical Data Link				PROJECT 675045: C2ISR Tactical Data Link			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
675045: C2ISR Tactical Data Link	1.671	1.659	1.584	0.000	1.584	1.608	1.633	1.658	1.682	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Tactical Data Links (TDL), as a subset of the broader Airborne Network are used in a combat environment to exchange information such as messages, data, radar tracks, target information, platform status, imagery, and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. TDLs provide a jam-resistant; secure digital data transfer network capability with new and standardized waveforms and data formats allowing Line of Sight (LOS) and Beyond Line of Sight (BLOS) intra- and inter-flight communications. TDLs are used by all Service theater Command and Control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Integrated Broadcast Service (IBS), Intra-Flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), and Tactical Targeting Network Technology (TTNT).

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Activities also include studies and analysis to support both current program planning and execution and future program planning to include the period of dual E-3 AWACS mission configuration ending in FY15.

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C2ISR Tactical Data Link program is in Budget Activity 7, Operational System Development, since it supports integration of tactical data links into operational systems.					
B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: C2ISR Data Link Integration and AWACS Block 30/35 Software Enhancements  FY 2009 Accomplishments: In FY 2009: Improved AWACS Link 16 interoperability and compatibility by incorporating key changes to communications software baseline. Interface Change Proposal (ICP) TJ04-018Ch6 incorporated Height Above Ellipsoid (HAE) elevation reporting via Link 16 avoiding Mean Sea Level (MSL) conversion errors that could be +/- 60 feet. HAE elevation data is required by the Joint Direct Attack Munitions (JDAM) class of munitions. ICP TM05-040Ch5 added a new definition of Area Major Axis and Area Minor Axis in J3.5C3 Words, and Land Square/Circle Switch and Latitude/Longitude Additions will enable the US AWACS to process extended precision messages for Precision Guided Munitions (PGMs). The new values can support accuracies to 8 ft or less.  FY 2010 Plans: In FY 2010: Global Area Reference System (GARS) Study: Provides an assessment to determine sufficiency of current computing resources necessary to incorporate the GARS Interface Change Proposal (GARS ICP TJ06-049Ch2). Deliverable includes a white paper discussing technical solutions, scope of effort and an assessment of technical, schedule, cost, and programmatic risks.  FY 2011 Base Plans: In FY 2011: N/A  FY 2011 OCO Plans: In FY 2011 OCO: Not Applicable.	1.671	0.200	0.000	0.000	0.000
MAJOR THRUST: C2ISR Data Link Integration and AWACS Block 40/45 Software Enhancements  FY 2009 Accomplishments: In FY 2009: N/A	0.000	1.459	1.584	0.000	1.584

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B. Accomplishments/Planned Program (\$ in Millions)													
									FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> In FY 2010: Improve AWACS Block 40/45 Link 16 interoperability and compatibility by incorporating key changes to communications software baseline implemented in Block 30/35 after the Block 40/45 Baseline was established. The first Block 40/45 ICP to be implemented will be TJ04-018Ch6, Height Above Ellipsoid (HAE) Adjustment Term, eliminating MSL to HAE conversion errors that could be +/- 60 feet. HAE elevation data is required by the JDAM class of munitions.</p> <p><i>FY 2011 Base Plans:</i> In FY 2011: Improve AWACS Block 40/45 Link 16 interoperability and compatibility by incorporating key changes to communications software baseline implemented in Block 30/35 after the Block 40/45 Baseline was established. Block 40/45 will implement ICP TM99-071Ch8, Generic Unit Precise Participant Location Identification (PPLI) Message, allowing friendly non-Link 16 units to forward their self-reported position and ID onto Link 16 as PPLI data, significantly enhancing situational awareness.</p> <p><i>FY 2011 OCO Plans:</i> In FY 2011 OCO: Not Applicable.</p>													
Accomplishments/Planned Programs Subtotals									1.671	1.659	1.584	0.000	1.584
C. Other Program Funding Summary (\$ in Millions)													
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost		
• PE 0207434F: Link 16 Sup & Sus, (RDT&E)	278.961	65.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
• PE 0207445F: Fighter TDL, (RDT&E)	55.069	66.872	85.492	0.000	85.492	169.748	118.655	0.000	0.000	0.000	0.000		
• PE 0207446F: Bomber TDL, (RDT&E)	21.603	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0401839F: Airlift TDL, (RDT&E)	7.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0604281F: TDN Enterprise, (RDT&E)	0.000	87.444	102.941	0.000	102.941	67.790	40.507	43.037	34.930	0.000	0.000
• PE 0207434F (1): Link 16 Sup & Sus, (APAF)	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0207445F (2): Fighter TDL, (APAF)	5.788	9.585	0.929	0.000	0.929	7.695	6.925	7.043	12.785	0.000	0.000
• PE 0207446F (3): Bomber TDL, (APAF)	0.000	0.000	0.000	0.000	0.000	0.339	0.337	0.368	0.972	0.000	0.000
• PE 0207448F: C2ISR TDL, (APAF)	0.000	0.000	0.000	0.000	0.000	0.959	0.912	0.927	1.729	0.000	0.000
• PE 0207434F (4): Link 16 Sup & Sus, (O&M)	131.597	0.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0207445F (5): Fighter TDL, (O&M)	0.208	0.198	0.219	0.000	0.219	0.221	0.257	0.258	0.268	0.000	0.000
• PE 0401839F (6): Airlift 3400, (O&M)	1.574	8.175	7.857	0.000	7.857	3.629	1.634	1.666	2.944	0.000	0.000
• PE 0604281F (7): TDN Enterprise, (O&M)	0.000	33.727	31.382	0.000	31.382	19.165	17.303	20.026	21.534	0.000	0.000
• PE 0207434F (8): Link 16 Sup & Sus, (OPAF)	16.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
• PE 0604281F (9): TDN Enterprise, (OPAF)	0.000	32.343	21.742	0.000	21.742	9.270	0.337	0.311	0.240	0.000	0.000
D. Acquisition Strategy											
The 653rd Electronics Systems Group (ELSG) provides for common development, integration and interoperability across the entire Airborne Network and ensures that TDLs are procured and maintained as a joint, end-to-end, command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.											

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### E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force											DATE: February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				<b>R-1 ITEM NOMENCLATURE</b> PE 0207448F: C2ISR Tactical Data Link				<b>PROJECT</b> 675045: C2ISR Tactical Data Link						
<b>Product Development (\$ in Millions)</b>														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
AWACS	SS/Various	Boeing Seattle WA	1.354	1.271	Dec 2009	1.214	Nov 2010	0.000		1.214	Continuing	Continuing	Continuing	
<b>Subtotal</b>			1.354	1.271		1.214		0.000		1.214				
<b>Remarks</b>														
<b>Management Services (\$ in Millions)</b>														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Office and Contractor Support	Various	Various Various	0.317	0.388	Jan 2010	0.370	Feb 2011	0.000		0.370	Continuing	Continuing	Continuing	
<b>Subtotal</b>			0.317	0.388		0.370		0.000		0.370				
<b>Remarks</b>														
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>			1.671	1.659		1.584		0.000		1.584				
<b>Remarks</b>														
Total Prior Years Cost may include only FY 2009 data.														

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Air Force

DATE: February 2010

**APPROPRIATION/BUDGET ACTIVITY**

3600: Research, Development, Test & Evaluation, Air Force  
BA 7: Operational Systems Development

**R-1 ITEM NOMENCLATURE**

PE 0207448F: C2ISR Tactical Data Link

**PROJECT**

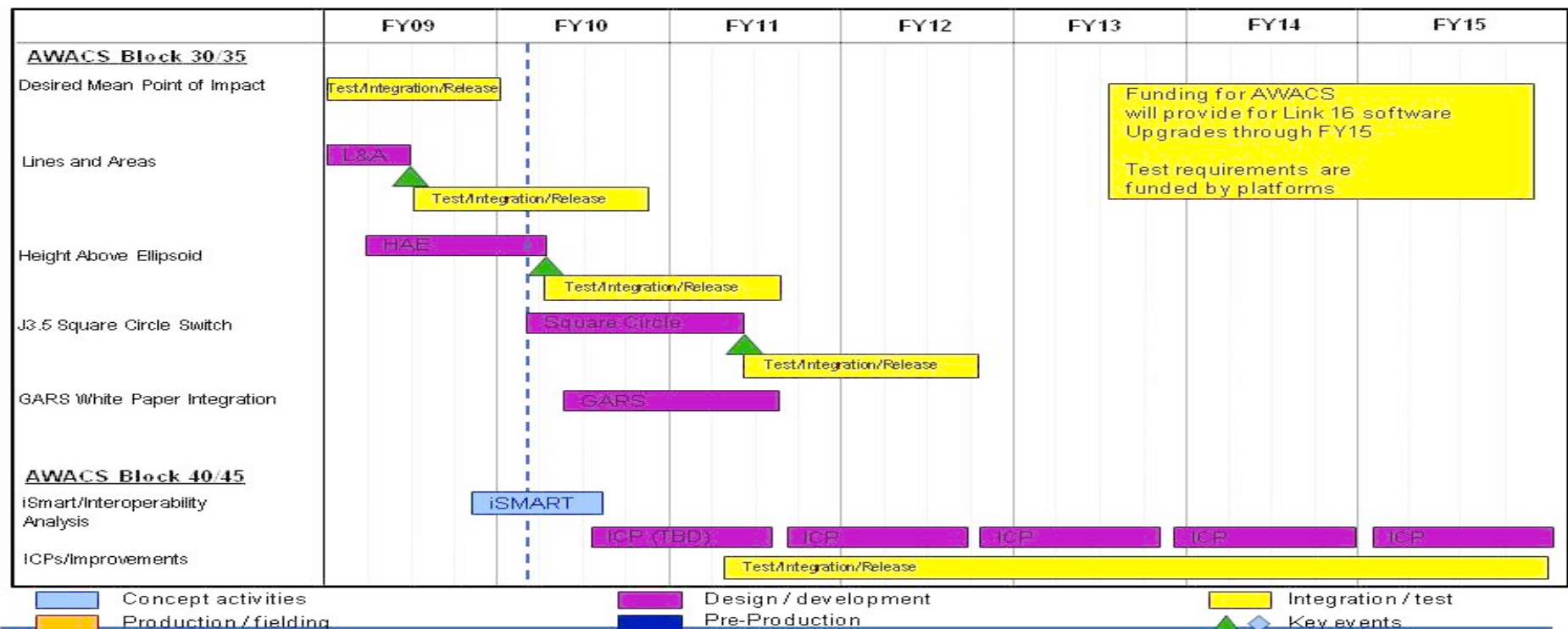
675045: C2ISR Tactical Data Link



# C2ISR Tactical Data Link

(as of 08 Dec 09)

FOR OFFICIAL USE ONLY



Funding for AWACS will provide for Link 16 software Upgrades through FY15  
Test requirements are funded by platforms

*Integrity - Service - Excellence*

FOR OFFICIAL USE ONLY

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2011 Air Force			<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207448F: <i>C2ISR Tactical Data Link</i>	<b>PROJECT</b> 675045: <i>C2ISR Tactical Data Link</i>	

## Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
AWACS 30/35 Desired Mean Point of Impact Test/Integration/Release	1	2009	4	2009
AWACS 30/35 Lines & Areas Design/Development	1	2009	2	2009
AWACS 30/35 Lines & Areas Test/Integration/Release	3	2009	4	2010
AWACS 30/35 Height Above Ellipsoid Design/Development	2	2009	2	2010
AWACS 30/35 Height Above Ellipsoid Test/Integration/Release	2	2010	3	2011
AWACS 30/35 J3.5 Square Circle Switch Design/Development	1	2010	2	2011
AWACS 30/35 J3.5 Square Circle Switch Test/Integration/Release	2	2011	4	2011
AWACS 30/35 Global Area Reference System White Paper Integration	2	2010	3	2011
AWACS Block 40/45 iSMART Database Updates	4	2009	3	2010
AWACS Block 40/45 ICPs/Improvements Design/Development	3	2010	4	2011
AWACS Block 40/45 ICPs/Improvements Test/Integration/Release	2	2011	4	2011

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